BOTANICAL MUSEUM LEAFLETS
HARVARD UNIVERSITY

MBRIDGE, MASSACHUSETTS, OCTOBER 31, 1935 VOL. 3, NO. 10

STUDIES IN STELIS. V.

BY

OAKES AMES

TWO RARE SPECIES FROM MIDDLE AMERICA

AMONG THE MIDDLE AMERICAN representatives of the highly technical genus Stelis, there are two remarkable, closely related species which have proved to be extraordinarily rare. They constitute a rather distinct subsection of Lindley's Labiatae. The first one to be described was published by H. G. Reichenbach in 1870 under the name *Stelis glossula.* Although the bibliographical references given below would seem to indicate that this species has been frequently in cultivation, herbarium records disprove this. The only specimens of which I have any knowledge are the type described by Reichenbach and a plant recently collected by C. H. Lankester in Costa Rica. The second species to be described was collected in Panama by C. W. Powell and was published in 1923 under the name *Stelis inaequalis.* In March 1923, I found a single plant of this species in the Republic of Honduras near Tela on the Atlantic coast. No other collections are known to me. That this second species of the alliance should have been overlooked through all the years of collecting in the countries lying between Mexico and Colombia until 1923 and then should have come to light almost simultaneously in two widely separated localities is simply another of the many perplexing coincidences of botanical exploration.

Notwithstanding the intensive collecting that has been done in Costa Rica, *Stelis glossula*, so far as my records indicate, escaped detection following its publication in 1870 until 1934, when it was rediscovered by Lankester. It is indeed noteworthy that both *Stelis glossula* and *S. inaequalis*, which constitute a distinct subsection of the Middle American stelids, should exhibit a high degree of localization in their distribution.

To account for the rarity of *Stelis glossula* and its recent rediscovery in Costa Rica, following years of intensive botanical collecting there, it is only necessary to consider the limited distribution of many orchids and the chances against rediscovery if the restricted areas in which they grow are not visited by collectors. It would seem reasonable to suppose that Lankester collected his specimens of *S. glossula* in or very near the type locality and the species may continue to be missing from collections until that locality is again explored or another locality where it grows is discovered. Always, however, in discussing the rarity of certain epiphytic orchids, it should be remembered that they usually establish themselves on the limbs of lofty trees in dense tropical forests, a peculiarity in their occurrence which limits the frequency with which they are detected and results in rarity being ascribed to them although in reality they may be common.

Stelis glossula and *S. inaequalis* differ fundamentally from the species which Lindley grouped together in his section Labiatae, in that the secondary stems are almost obsolete and the plants in their habit resemble species of Masdevallia. Typical species of the Labiatae have elongated stems with the secondary stems well developed and usually widely separated. Furthermore, the labellum in flowers of typical examples of the Labiatae differs markedly from the form of lip characteristic of *S. glossula* and *S. inaequalis.* Until a revision of the genus Stelis is attempted, these two species may be regarded as constituting a distinct subsection of Lindley's Labiatae.

Stelis glossula *Reichenbach filius* in Gard. Chron. (1870) 1373—Polakowsky in Jahresber. Ver. Erdk. Dresden, Wissen. Theil 16 (1879) 89—Hemsley in Gard. Chron. n.s. 12 (1879) 108; 16 (1881) 136; in Godman & Salvin Biol. Centr.-Am. Bot. 3 (1883) 203—Pittier in Anal. Mus. Nac. Costa Rica 1 (1887) 73—Nicholson Ill. Dict. Garden. 3 (1887) 494; ed. 2, 3 (n.d.) 494—Wright & Dewar, Johnson's Gard. Dict. new ed. (1894) 930—Veitch Hort. Veitchii (1906) 154—Pucci Encicl. Ortic. 4 [1916] 1436—Hubbard in L. H. Bailey Stand. Cycl. Hort. 6 (1917) 3234; new ed. 3 (1925) 3234—Schlechter in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 445.

"Bilabiata, dense caespitosa; caulibus secundariis brevissimis; foliis cuneato oblongo-ligulatis apice minute bilobis cum denticulo; racemo longe distiche florido; bracteis triangulis ovaria longa non aequantibus; sepalo dorsali oblongo obtuse acuto quinquenervi elongato; sepalis lateralibus oblongo ovatis apiculatis apicem versus connatis subtrinerviis multo minoribus; petalis obtuse rhombeis uninerviis; labello carnoso papuliformi supradorsum bilamellato columna subaequali.

"A caespitose little Stelis, with spatulato-ligulate leaves, and a very curious inflorescence. The brownish flowers stand in two transverse rows, the upper sepal having a much longer extent than the whole of the other organs of the flower together.

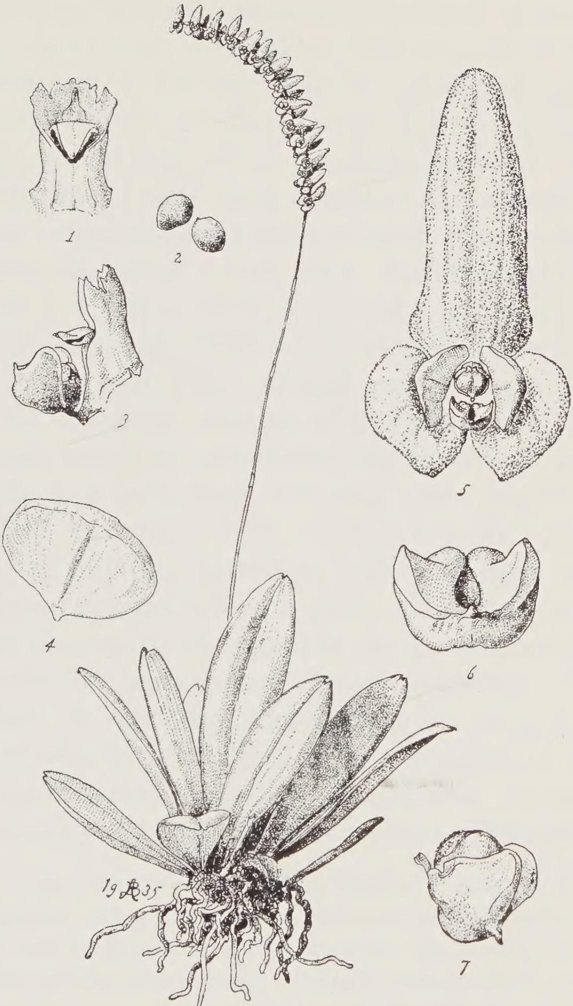
"This little species was imported by Messrs. Veitch from Costa Rica. *H. G. Rchb. fil.*" (*Reichenbach filius* in Gard. Chron. (1870) 1373).

The following redescription was prepared from the

EXPLANATION OF ILLUSTRATION

Stelis glossula *Reichb.f.* Plant natural size, drawn from *Lankester 1373*. 1, column (anther removed) enlarged eighteen times. 2, pollinia enlarged. 3, column and labellum, viewed laterally enlarged about eighteen times. 4, petal enlarged fifteen times. 5, flower enlarged about eleven times. In this figure the dorsal sepal was drawn as it appears in flowers preserved in alcohol, strongly convex with the margins reflexed. 6, labellum, front view enlarged about twenty times. 7, labellum, side view, drawn from Reichenbach's type of *Stelis glossula*. Plant and figures 1 to 6 drawn from a specimen collected by C. H. Lankester and preserved in alcohol.

Drawn July 1935 by Blanche Ames



STELIS *glossula* *Reichb. f.*

type and Lankester's no. 1373.

Roots fibrous, smooth, about 1 mm. in diameter. Secondary stems very short, almost obsolete, rarely exceeding 2 mm. in length, densely caespitose. Leaves 2–5 cm. long, 8–10 mm. wide, oblong-elliptic, about 3 mm. thick, bidentate at the tip with the mid-nerve extended into a short apicule. Peduncle with the raceme up to 9 cm. long; raceme up to 2.5 cm. long, arcuate. Pedicel and ovary about 1 mm. long, sheathed at the base of the pedicel by a short infundibuliform bract. Flowers numerous, distichous, about 4 mm. long. Lateral sepals 1.5–2 mm. long, 1–1.5 mm. wide, 3-nerved, connate to about the middle, forming a transversely elliptical convex lamina that is 2–3 mm. wide. Dorsal sepal 3–4 mm. long, 2 mm. wide, elliptical, obtuse, strongly convex, fleshy, 3–5-nerved, minutely glandulose on the inner surface. Petals about 1 mm. long, 1.5 mm. wide, flabellate or transversely elliptical, very fleshy, heavily 1-nerved through the middle. Labellum scarcely 1 mm. long, about as broad as long, 0.5 mm. thick, quadrate, strongly convex in front with an apiculate process at the rounded apex, posteriorly convex and densely papillose, shortly unguiculate at the base. Column 1 mm. long, 3-lobed at the summit, with the posterior lobe truncate or minutely denticulate; rostellum linguiform, triangular; stigmas confluent beneath the rostellum. Pollinia two.

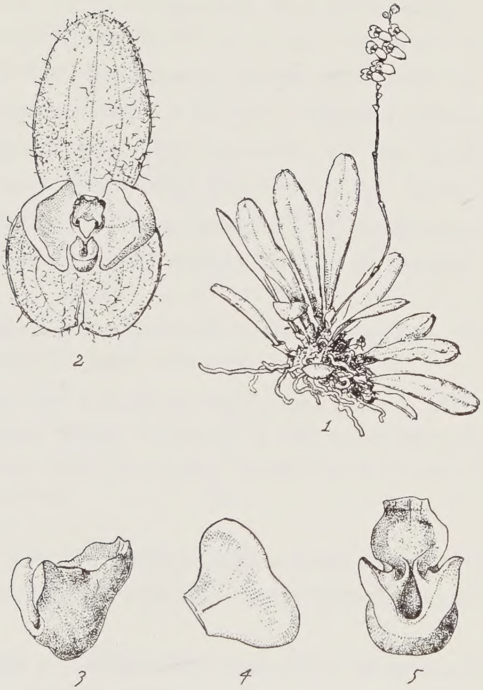
Costa Rica, without exact locality. *Endres* (Type in the Reichenbach Herbarium, being a plant from the horticultural establishment of James Veitch); Buenos Aires de Terraba. In scrubby forest on slender limbs of trees near a creek. Probably widespread, though only a few plants were seen. Lateral sepals, petals and lip brown. Dorsal sepal yellow or brown. Anther white. May 1934. (flowering in Cartago in August 1934), *C. H. Lankester 1373.*

Stelis inaequalis *Ames* in Sched. Orch. 4 (1923) 12; in Standley Flora of the Panama Canal Zone in

EXPLANATION OF ILLUSTRATION

STELIS INAEQUALIS *Ames.* 1, plant drawn natural size from the type. 2, flower enlarged about twelve times, drawn from *Ames II. 243.* In this figure the dorsal sepal is drawn as it appears in dried flowers when flattened by pressure. Cf. fig. 5 under explanation of plate of *S. glossula.* 3, labellum, side view, enlarged about thirty-six times, drawn from *Ames II. 243.* 4, petal enlarged about twenty-four times, drawn from the type. 5, labellum enlarged about thirty-six times.

Drawn from dried specimens July 1935
by BLANCHE AMES



STELIS *inaequalis* Ames

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Contrib. U. S. Nat. Herb. 27 (1928) 133.

Stelis inaequalis is most clearly differentiated from *S. glossula* by the smaller leaves which average 2 cm. in length, by the smaller flowers and by the inapiculate termination of the lip. Lateral sepals 1 mm. long. Dorsal sepal 2–2.5 mm. long. Lip 0.5 mm. long, very fleshy, lightly pandurate with a deep, rounded depression in front, shortly bicarinate below the middle. Column 3-lobed at the summit with the stigmas confluent beneath the triangular rostellar process. In the specimens from Panama and Honduras the leaves are from 1.5–3.2 cm. long and about 5 mm. wide. The peduncle and raceme together are approximately 5 cm. in length.

HONDURAS, Department of Atlántida near Tela. Epiphyte in open forest. March 21, 1923. *Ames II. 243.*

PANAMA, San Juan at sea-level in the foothills of the upper reaches of the Chagres River. Growing on the upper side of large limbs of trees. Flowers chocolate color, appearing in January and February. *C. W. Powell 272.*

STUDIES REGARDING THE SYNONYMY OF THREE SPECIES FROM MIDDLE AMERICA

Stelis ovatilabia *Schlechter* in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 446, *nomen*, and in Fedde Repert. 15 (1918) 211.

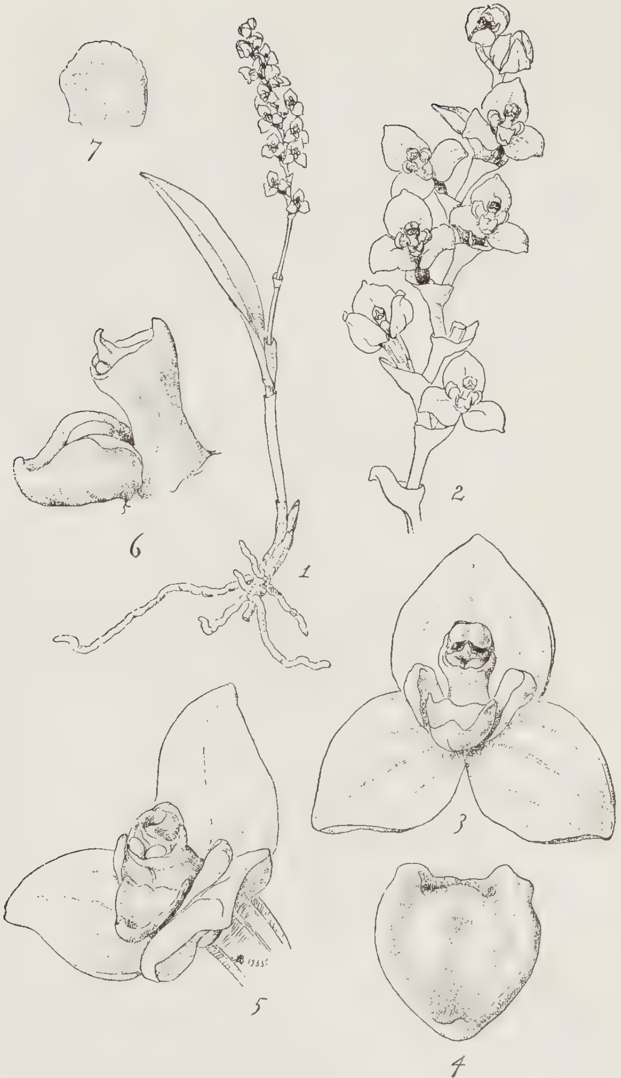
Stelis cyclopetala Schlechter in Fedde Repert. Beihefte 19 (1923) 279.

In 1918, Rudolf Schlechter described *Stelis ovatilabia*, a new species from Guatemala. The type specimen consists of a single plant collected in 1878 by Bernoulli and Cario. This species is exceptional among Middle American representatives of the genus in the relative lengths of the column and petals. The column is diagnostic in that it is almost twice longer than the petals.

EXPLANATION OF ILLUSTRATION

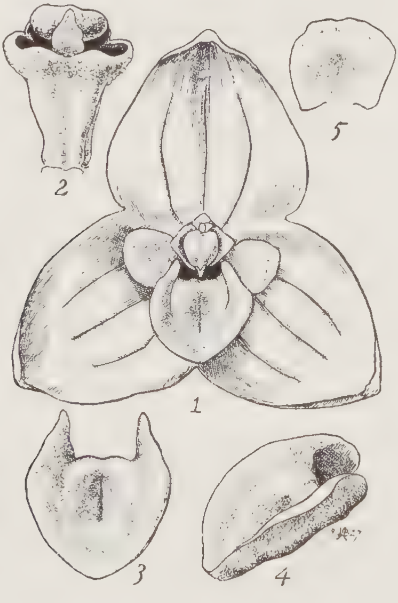
Stelis ovatilabia *Schltr.* 1, plant natural size drawn from *Bates 19*. 2, raceme much enlarged. 3, flower enlarged eleven times. 4, labellum enlarged twenty-two times. 5, flower enlarged eleven times. 6, column (anther removed) enlarged twenty-one times. 7, petal enlarged twenty-one times.

Drawn July 1935 from specimens preserved in alcohol
by Blanche Ames



STELIS *ovatilabia* *Schltr.*

Stelis ovatilabia is a variable species in the length of the secondary stems and in the length of the leaves. The type is about 11 cm. tall from the base of the secondary stems to the tip of the raceme, with the leaves 3.5–5 cm. long and 6–8 mm. wide; but specimens measuring only 6 cm. in height have been seen, and several plants collected recently in Guatemala by Alexander F. Skutch exceed 22 cm. in height. In all of the specimens examined the flowers are about of equal size, the sepals measuring 2 mm. in length. The stigmas are confluent beneath the rostellar process of the column and when fresh protrude as semiglobular masses of viscous consistency.

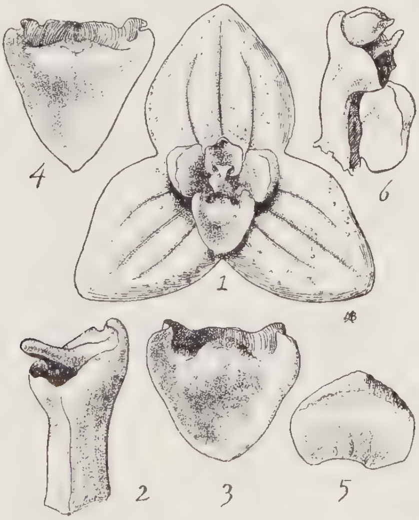


Stelis ovatilabia Schltr. drawn from the type of *S. cyclopetala* Schltr. 1, flower enlarged about thirteen times. 2, column, front-view, enlarged twenty times. 3, labellum enlarged twenty times. 4, labellum enlarged about twenty times. 5, petal enlarged twenty-two times.

Drawn with the aid of the camera lucida from a dried specimen
by Blanche Ames

In dried specimens the fleshy labellum becomes flattened and more or less rounded at the tip (cf. text figure). In its natural condition the labellum is strongly concave, with the lip more or less acute and sharply bent upward, resembling *Stelis rubens* Schltr.

In 1923, Schlechter described a Costa Rican species naming it *Stelis cyclopetala.* In his observations regarding the distinctive character of the flower, he emphasized the strikingly tall column as being twice longer than the petals. As close allies of his new species he referred to *S. pusilla* HBK., and *S. angustifolia* HBK. Yet he made no mention of *S. ovatilabia* Schltr. which stands out distinctly among Middle American species of the genus in having an extraordinarily elongated column. *S. cyclopetala* is so similar to *S. ovatilabia*, differing from it chiefly in having more membranaceous petals, that there is every reason to suspect that Schlechter simply overlooked his earlier species when he proposed a new one. Perhaps the difference between the petals might be used to differentiate the Costa Rican *S. cyclopetala* as a variety of *S. ovatilabia*, yet this would seem to be unwise in view of our present knowledge of the peculiarities of Stelis. The type of *S. cyclopetala* is a diminutive plant scarcely 6 cm. tall, but the tendency toward great variation in the vegetative proportions of species of Stelis indicates the need for caution in using size of stems and leaves as specific characters. Schlechter made sketches of the labellum to show his conception of its structure and these sketches conform to my camera lucida drawings made from the types. In the illustrations prepared for this paper by Blanche Ames, the labellum of *S. cyclopetala* appears to be conspicuously auriculate while the labellum of *S. ovatilabia* is exauriculate. This difference, however, is apparent rather than real, because a slight compression of the labellum at the base in herbarium specimens of *S. ovatilabia* induces an auriculate aspect. Furthermore, much depends on the angle at which the labellum is held when it is observed. If descriptions and drawings are made from dried specimens, allowances have to be made for changes ensuing after the flowers are crushed or flattened by pressure. Fortunately a specimen of *S. ovatilabia* collected by Marston Bates in Guatemala and preserved in alcohol has made it possible to represent the species with an approach to its aspect when alive.



Stelis ovatilabia Schltr. drawn in part from the type and from *Shannon 3670*. 1, flower enlarged about eleven times. 2, column (anther removed) enlarged about twenty-one times. 3, labellum enlarged twenty times. 4, labellum from the type enlarged about twenty times. 5, petal enlarged twenty-four times. 6, column and petal enlarged about eighteen times.

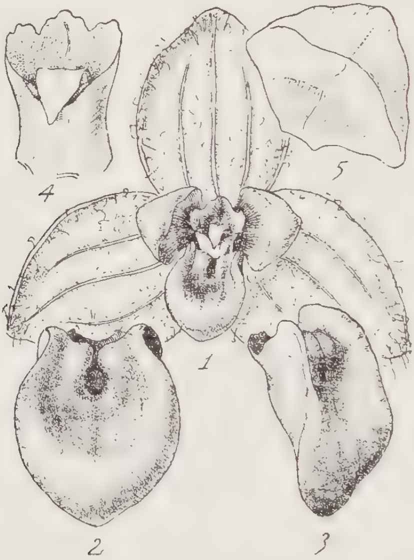
Drawn with the aid of the camera lucida from a dried specimen by Blanche Ames

Guatemala, April 1878. *Bernoulli & Cario 583*: Department of Chimaltenango, Tecpam at 8,500 feet altitude. In mixed pine and oak forest. May 17, 1931. *Marston Bates 19*; Chichavac. At 8,000-9,000 feet altitude. Flowers greenish white. In pine and oak woods. July

9, 1933. *Alexander F. Skutch 374*: Department of Amatitlan. Volcán Pacaya. At 8,000 feet altitude. July 1892. *W.C.Shannon 3670.*

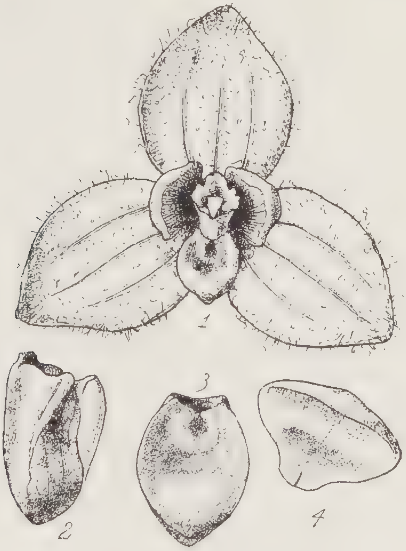
Costa Rica, El Copey, at 7,500 feet altitude. *H. Pittier*: On fallen oak. April 19, 1928. *H. E. Stork 1609.*

Stelis ciliaris *Lindley* in Comp. Bot. Mag. 2 (1836) 353—Loddiges Orch. [1842] 4 —Reichenbachfilius in Linnaea 18 (1844) 400—Lindley Fol. Orch. Stelis (1858) p. 14—Paxton Bot. Dict. new ed. (1868) 537—Hemsley in Gard. Chron. n. s. 12 (1879) 108; 16 (1881) 136; in Godman & Salvin Biol. Centr.-Am. Bot. 3 (1883) 203—Nicholson Ill. Dict. Garden. 3 (1887) 494; ed. 2, 3 (n.d.) 494—Wright & Dewar, Johnson's Gard. Dict.



Stelis ciliaris Lindl. drawn from the type. 1, flower enlarged about nine times. 2 and 3, labellum enlarged about sixteen times. 4, column (anther removed) much enlarged. 5, petal enlarged about twenty-two times.

Drawn with the aid of the camera lucida from a dried specimen by Blanche Ames new ed. (1894) 930—Wright, Cassell's Dict. Pract. Gard. 2 [1902] 360—Costantin Atlas Orch. Cult. [1913?] t. 22, figs. 17 & 17′. Pucci Encicl. Ortic. 4 [1916] 1436—Hubbard in L. H. Bailey Stand. Cycl. Hort. 6 (1917) 3234; new ed. 3 (1925) 3234—Schlechter in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 444.



Stelis ciliaris Lindl. drawn from *Standley 23900.* 1, flower enlarged about nine times. 2 and 3, labellum enlarged about fifteen times. 4, petal enlarged about seventeen times.

Drawn with the aid of the camera lucida from a dried specimen by Blanche Ames

Stelis atropurpurea Hooker in Bot. Mag. 69 (1842) t. 3975—Lindley in Bot. Reg. 28 (1842) Misc. p. 86—Paxton Mag. Bot. 9 (1842) 239—D. Dietrich Syn. Pl. 5 (1852) 30—Paxton Bot. Dict. new ed. (1868) 537—Nicholson Ill. Dict. Garden. 3 (1887) 494; ed. 2, 3 (n.d.) 494—Wright & Dewar, Johnson's Gard. Dict. new ed. (1894) 930—Schlechter Orchideen (1914) 175; ed. 2, (1927) 172—Pucci

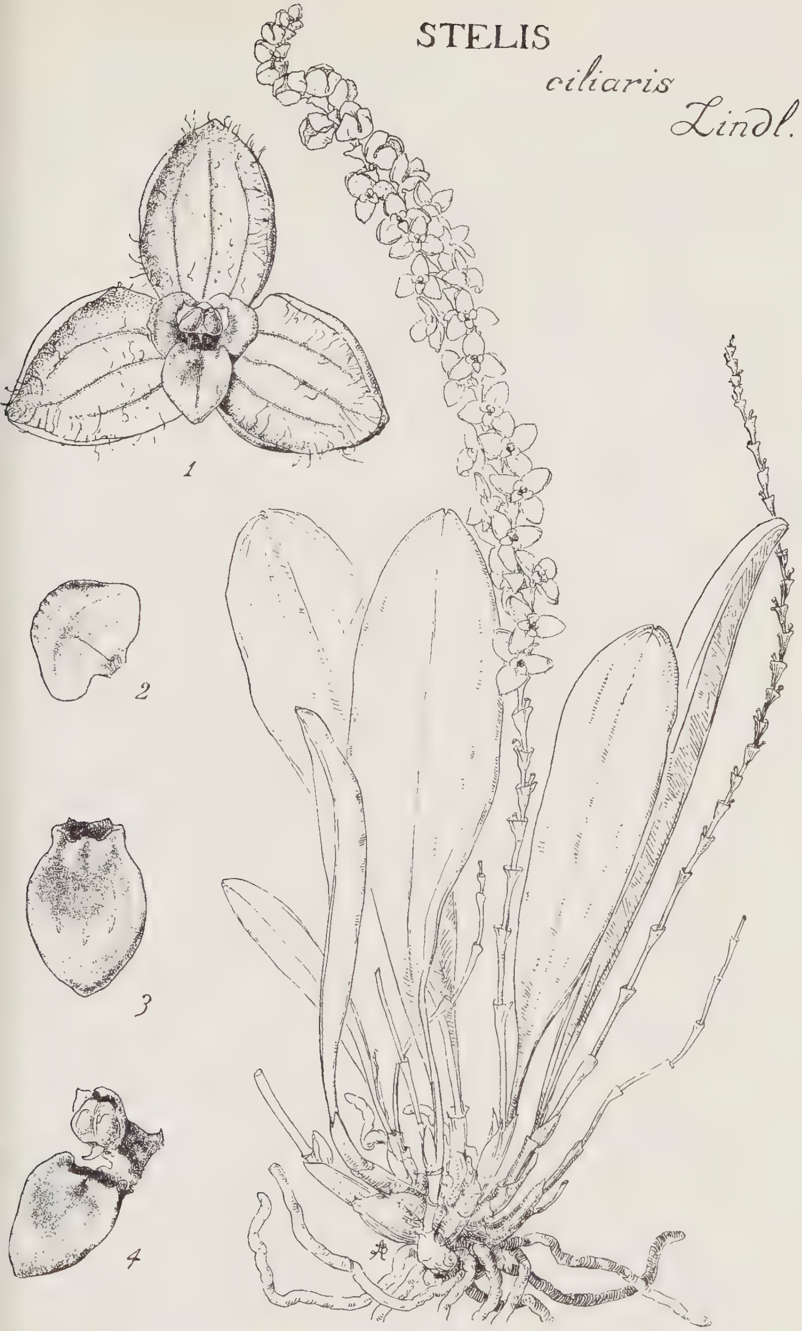
EXPLANATION OF ILLUSTRATION

STELIS CILIARIS *Lindl.* Plant drawn natural size from the type of *Stelis Jimenezii* Schltr. 1, flower enlarged about nine times. 2, petal enlarged about thirteen times. 3, labellum enlarged about sixteen times. 4, column and labellum enlarged.

Drawn from dried specimens of Jimenez 621 with the aid of the camera lucida by BLANCHE AMES

STELIS

ciliaris Lindl.



Encicl. Ortic. 4 [1916] 1435.

Stelis confusa Schlechter in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 386, 444.

Stelis Jimenezii Schlechter in Beihefte Bot. Centralbl. 36, Abt. 2 (1918) 389, 445; in Fedde Repert. Beihefte 19 (1923) 279.

In my opinion, *Stelis confusa* and *S. Jimenezii* are referable to *S. ciliaris.* The flowers of *S. Jimenezii* are larger as a rule (labellum about 2 mm. long) than the flowers of the type of *S. ciliaris,* in which the labellum is approximately 1.5 mm. long, but structurally they reveal nothing substantial by which to emphasize specific differentiation. In earlier studies of *S. Jimenezii,* I was inclined to regard it as being separable from *S. ciliaris* through vegetative differences, but recent studies have shown that these differences are negligible and nothing more than constitutional variation.

The sepals show varying degrees of glandulousness and ciliation. Schlechter described *S. Jimenezii* as being smooth-flowered, but the flowers of the type when closely examined proved to have both short and long glands on the surface, with the remains of broken marginal glands.

Mexico, State of Vera Cruz, Mirador. February 1839. *J. Linden 213*; Zacuapan. March 1913. *C. A. Purpus 2122* (Type of *S. confusa*): State of Campeche, Tuxpeña. February 14, 1932. *C. L. Lundell 1332.*

British Honduras, Maskall. Pine ridge. January 1934. *Percy H. Gentle 1100*: March 31, 1934. *Gentle 1196.*

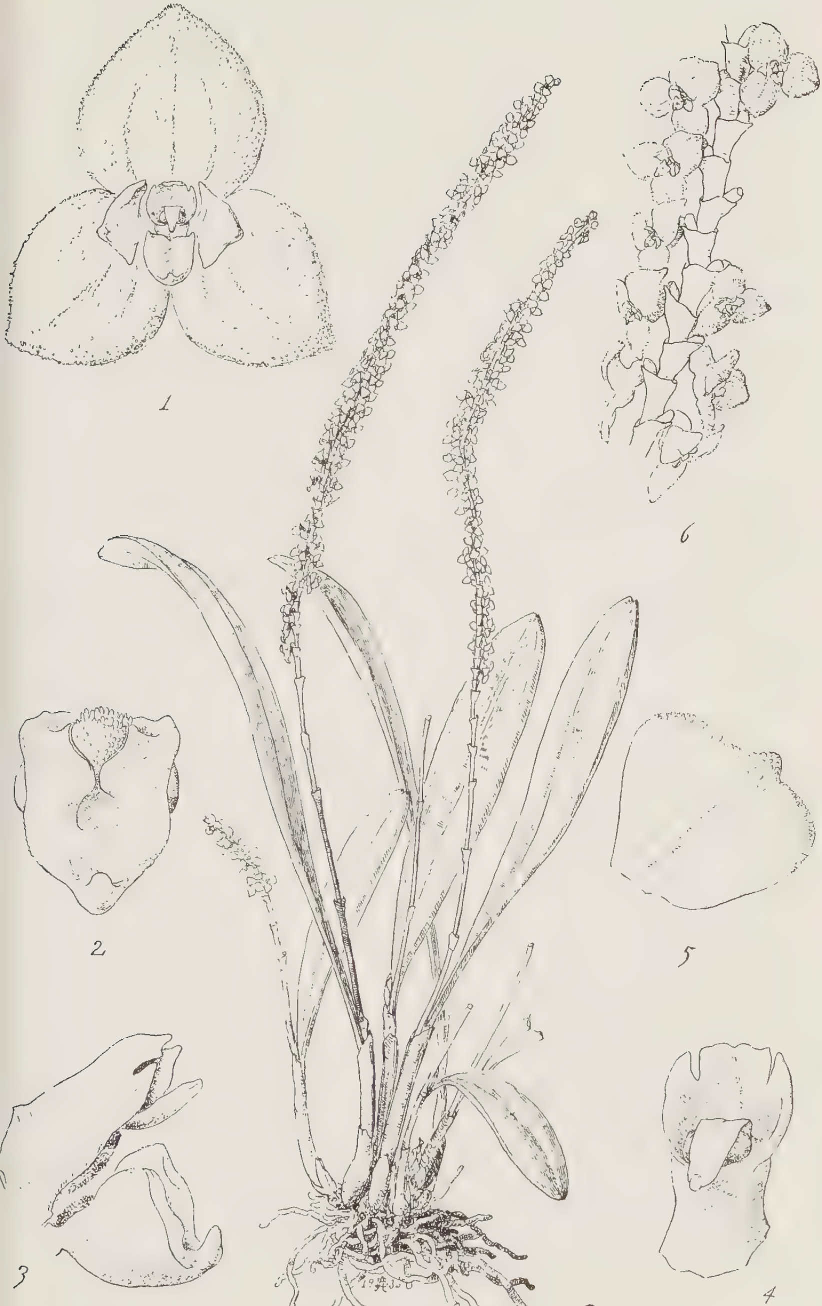
Guatemala, *Sereno Watson.* (Specimen cultivated in the Botanic Garden of Harvard University): District of Petén, La Libertad, Sabana Francisco. March 29, 1933. *C. L. Lundell 2141*; Department of Izabal, vicinity of Quirigua. At 75-225 meters altitude. May 15-31, 1922. *Paul C. Standley 23900.*

Costa Rica, Province of San José, La Verbena. February 1912. *Otón Jimenez 621* (Type of *S. Jimenezii*); Vicinity of La Verbena. At 1,200 meters altitude. January 29, 1924. *Paul C. Standley 32245*: San Ramón. *G. Acosta.*

EXPLANATION OF ILLUSTRATION

Stelis crescentiicola *Schltr.* Plant natural size, drawn from a duplicate type of *S. praemorsa* Schltr. 1, flower enlarged about twenty times. 2, labellum enlarged about thirty-two times. (The circular area which appears to be a hole is made up of the paler tissues of the basal callus which becomes abruptly narrowed at its distal end and fills the space between the convergent lobes of the disc). 3, labellum and column viewed from the side, enlarged about thirty-two times. 4, column (anther removed) enlarged about thirty-two times. 5, petal enlarged about thirty-eight times. 6, part of the raceme, much enlarged.

Drawn with the aid of the camera lucida from specimens (preserved in alcohol) of Powell 234 by Blanche Ames



STELIS *crescentiicola* Schltr.

Stelis crescentiicola *Schlechter* in Fedde Repert. 16 (1920) 442—Ames in Sched. Orch. 5 (1923) 11.

Stelis flexuosa Lindley sensu Kränzlin in Engler Bot. Jahrb. 26 (1899) 450.

Stelis Isthmi Schlechter in Fedde Repert. Beihefte 17 (1922) 16.

Stelis praemorsa Schlechter in Fedde Repert. Beihefte 17 (1922) 17.

In Schedulae Orchidianae, I discussed the characters of *Stelis crescentiicola* Schltr. and gave my reasons for reducing *S. Isthmi* Schltr. and *S. praemorsa* Schltr. to synonymy. When my remarks regarding *S. Isthmi* and *S. praemorsa* were written, I had arrived at my conclusions from a study of duplicate specimens taken from the plants in C. W. Powell's Balboan garden that had supplied Dr. Schlechter with his types. Since then I have examined the type specimens preserved in Schlechter's herbarium and have been able to justify my suspicion that Schlechter described the labellum of *S. praemorsa* from imperfect flowers and to support my conclusion that *S. Isthmi* is inseparable from *S. crescentiicola.*

Stelis crescentiicola is most closely allied to *S. latipetala* Ames (cf. Bot. Mus. Leafl. Harv. Univ. 3 (1935) 53), but differs from it in the consistently smaller leaves, in the lobes of the column and in the form of the labellum. The flowers vary in color from white to purple with pink-flowered and pink- and yellow-flowered forms occurring. The labellum is scarcely 1 mm. long, very fleshy and characterized by a more or less abruptly ascending, rounded tip. Viewed from the side it is triangular. In dried specimens the labellum exhibits a wide range of variation caused by the changes brought about by the shrivelling of its fleshy tissues. The column has the stigmas confluent beneath the triangular rostellar process.

Costa Rica, Pandora. *A. Alfaro 205*: Salvaje, 1925. *Alfaro 204*.

Panama, *F. C. Lehmann 4540* (Type of *Stelis crescentiicola* Schltr.): east of Panama City, *C. W. Powell 234* (Type of *Stelis praemorsa* Schltr.): near Arrajan west of the Canal about at sea-level: east of Panama City, *C. W. Powell 232* (Type of *Stelis Isthmi* Schltr.): foothills east of Panama City. Flowers white. *Powell 285*; flowers pink, *Powell 284*: San Juan. Epiphyte at sea-level, April 1923. *Powell 3312*: San Juan range. Epiphyte at sea-level. March 1924. *Powell 3522*: epiphyte on large bignoniaceous vine in tidal belt. Flowers greenish. April 24, 1914. *H. Pittier 6595*.

Reprinted August 1966.